REMARKS/ARGUMENTS

Claims 1-5, 9-15, 17-21, and 23-25 are pending in the application. Claims 1-5, 9-15, and 17-20 are rejected. Claims 21 and 23-25 are allowed. In view of the foregoing amendments and the following remarks, Applicants respectfully request allowance of Claims 1-5, 9-15, and 17-20.

ALLOWABLE CLAIMS 21 AND 23-25

Applicants note a discrepancy between the Office Action and the Office Action Summary with respect to Claims 21 and 23-25. The Office Action Summary indicates that all pending claims are rejected; however, the Examiner notes on page 2 that Claims 21 and 23-25 are allowed. In light of the fact that no further arguments are made by the Examiner with respect to Claims 21 and 23-25, Applicants assume that the claims are allowed, and respectfully request unequivocal indication of same in the next Office Action.

PRIOR ART REJECTIONS

Claims 1-2 and 9-11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kim (US 6,862,402) in view of Lightstone et al. (US 2005/0084007 A1).

Claims 3-5 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kim in view of Lightstone et al., further in view of Ma et al., "Rate Control for Advance Video Coding (AVC) Standard," IEEE 2003.

Claims 12-14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kim in view of Lightstone et al, and further in view of Ma et al.

Claims 15, 17 and 18 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Chung et al. (US 5,598,213) in view of Lightstone et al., further in view of Ozawa et al. (US 6,900,829 B1).

Claims 19 and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Chung et al. in view of Lightstone et al, further in view of ITU-T H.264 Series H: Audiovisual and Multimedia Systems Infrastructure of Audiovisual Services - Coding of moving Video Advanced Video coding for generic audiovisual services, 5/2003 (ITU-T).

CLAIMS 1-5 AND 9-10 DEFINE OVER THE PRIOR ART

Previously amended independent claim 1 recites in part:

> wherein **the comparator is a weighted comparator**, having an
> input for a **weighting value** that determines a relative value
> adjustment between the fullness indicator and an output of the
> virtual buffer fullness computer, wherein **the weighting value is
> set according to an application for which the video coder is to
> be used**.

The combination of Kim and Lightstone et al. (Lightstone) does not teach or suggest the rate controller recited in claim 1. In particular, the combination of Kim and Lightstone does not teach at least the weighted comparator, having an input for a weighting value that determines a relative value adjustment between the fullness indicator and an output of the virtual buffer fullness computer; or, the weighting value being set according to an application for which the video coder is to be used. Applicants agree with the Examiner's assertion that Kim is silent with respect to at least these elements. The Examiner cites Lightstone as overcoming these deficiencies; Applicants respectfully disagree.

Lightstone discloses a programmable rate controller which includes a parameter select input for "defining parameters to adjust the function" of the rate controller. (See Lightstone, para. 23). In discussing some of the programmable rate controller parameters, Lightstone mentions a "picture weighting factor." The picture weighting factors of Lightstone are defined as follows in Appendix 1 of Lightstone:

> W_P, W_B; The relative weighting for the bit allocation of P and B
> pictures as compared to I pictures (where W_I is implicitly 1.0).
> Typical values are 1.0 for W_P and 1.4 for W_B.

(See Lightstone, page 8). These picture weighting factors do not act as an input to a weighted comparator that "determines a relative value adjustment between the fullness indicator and an output of the virtual buffer fullness computer" as claimed. Moreover, there is no discussion of setting any weighting factor *according to an application for which the video coder is to be used.* Lightstone has no discussion corresponding to either of these features.

Furthermore, the only paragraph of Lightstone cited by the Examiner that might be construed as discussing some comparison of buffer fullness indicators – actual, virtual or otherwise – is paragraph 54, which makes no mention of a weighting value that informs a comparator of virtual and actual transmit buffer fullness indicators. Indeed, paragraphs 55 and 56, which describe the bit allocation module first referenced in paragraph 54, discuss the Lightstone weighting parameters (i.e., W_m and W_n in the equation between paragraphs 55 and

56), but again describe them as "indicating the relative weighting for pictures of type m..." (as above). Further to the aforementioned equation, Paragraph 57 describes the relationship between X_n (i.e., the "estimated complexity for pictures of type m after encoding picture I and M...") and W_n as a "weighted complexity," which is not the same thing as a weighted comparison as recited in claim 1.

Finally, although Lightstone states that "parametric constraints may be set for the needs of particular applications," Lightstone nowhere suggests that the parametric constraints involve any weighting as is claimed now. Lightstone sets his parametric constraints by modifying the various parameters directly, such as, for example, the target quality. (See Lightstone, para. 86). In the present invention, the **comparator** – comparing the *actual* transmit buffer fullness indicator with the *virtual* transmit buffer fullness indicator – is weighted by a value indicating the type of application for which the coder is to be used. This is wholly different from simply adjusting directly some "parametric constraint."

For at least these reasons, Applicants believe that the rejection of claim 1 should be reconsidered and withdrawn. Claims 2-5 and 9-10 depend from independent claim 1 and are allowable for at least the reasons applicable to claim 1, as well as due to the features recited therein.

CLAIMS 11-14 DEFINE OVER THE PRIOR ART

Previously amended independent claim 11 recites in part:

> generating a buffer fullness indicator by weighting a comparison of
> an actual buffer fullness value to the virtual buffer fullness value,
> wherein the comparison is weighted by a variable *w* set according
> to an application for which the new picture is being coded

Neither Kim nor Lightstone, either alone or in combination, teach or suggest at least the above features of independent claim 11 for at least those reasons discussed above in conjunction with claim 1. Specifically, neither Kim nor Lightstone teach or suggest generating a buffer fullness indicator based on a weighted comparison of an actual buffer fullness value and a virtual buffer fullness value using a weighting variable set according to a coding application as recited in claim 11.

Accordingly, Applicants believe that the rejection of claim 11 should be reconsidered and withdrawn. Claims 11-14 depend from independent claim 11 and are allowable for at least the reasons applicable to claim 11, as well as due to the features recited therein.

CLAIMS 15 AND 17-20 DEFINE OVER THE PRIOR ART

Previously amended claim 15 recites in part:

> wherein the comparison of buffer indicators comprises:
> **multiplying the virtual transmit buffer fullness indicator by a first weighting factor,**
> **multiplying the actual transmit buffer fullness indicator by a second weighting factor,** and
> generating an overall fullness indicator representing a comparison of the weighted transmit buffer indicators,
> **wherein the first weighting factor and the second weighting factor are set according to a particular video coding application.**

The combination of Chung, Lightstone, and Ozawa does not teach or suggest the rate control method recited in claim 15. In particular, the combination of Chung, Lightstone, and Ozawa does not teach at least multiplying the virtual transmit buffer fullness indicator by a first weighting factor, multiplying the actual transmit buffer fullness indicator by a second weighting factor, and generating an overall fullness indicator representing a comparison of the weighted transmit buffer indicators, wherein the first weighting factor and the second weighting factor are set according to a particular video coding application.

Applicants agree with the Examiner's assertion that Chung is silent with respect to at least these elements. However, for at least the reasons outlined above in conjunction with claim 1, Applicants disagree with the Examiner's assertion that Lightstone teaches the comparison of buffer indicators comprising multiplying the virtual and actual transmit buffer fullness indicators by a weighting factor, and generating an overall fullness indicator representing a comparison of the weighted transmit buffer indicators wherein the weighting factor and the weighting factor is set according to a particular video coding application.

Ozawa also fails to teach or suggest setting a weighting factor or weighting factors "according to a particular video coding application" as recited in claim 15. As detailed below, Ozawa is not directed to video coding or the comparison of buffer fullness indicator levels and so also fails to disclose setting a weighting value or values based on a particular coding application.

Furthermore, Applicants contend that a person having ordinary skill in the art would not have reason to combine the teachings of Chung, Lightstone and Ozawa in the manner suggested by the Office Action on pages 10-11 to arrive at the claimed invention.

SJ01 121054 v 1

Ozawa is directed to a field of endeavor that is separate and distinct from that of Chung and Lightstone. Chung is directed to a method for controlling bit rates during video encoding operations based on the complexity of video data frames, and Lightstone is directed to a video encoder including a programmable rate controller. Ozawa, on the other hand, is directed to reducing random noise in a video display system. That is, Ozawa is in no way related to video coding or, more specifically, to adjusting bit rates based on complexity estimations of received video signals. Likewise, neither Chung nor Lightstone is in any way related to the reduction of random noise in a video display system. Therefore, one having ordinary skill in the art would not look to Ozawa to supplement the teachings of Chung and Lightstone as Ozawa is directed to an entirely separate field of endeavor that does not attempt to solve a problem that is the focus of either Chung or Lightstone.

The alleged results of combining Chung, Lightstone and Ozawa stated by the Office Action on page 11 are illogical. The Office Action alleges that the combination would "reduce reproduction and coding error." Neither of these stated goals are goals of Chung or Lightstone. Chung is directed to varying coding rates to account for the complexity of video frames to be coded and the amount of coded bits generated already for prior coded video frames, and Lightstone to a programmable rate controller with a parameter select input for defining parameters to adjust the function of the controller. Neither Chung nor Lightstone is directed to coding error or the reduction of reproduction caused by random noise by improved rate control. Therefore, it is clear that Chung and Lightstone are directed to problems separate and distinct from Ozawa and have in common only that they are all three related to video signals.

Accordingly, in the view of the foregoing, Applicants believe that the rejection of claim 15 should be reconsidered and withdrawn. Claims 17-20 depend from independent claim 15 and are allowable for at least the reasons applicable to claim 15, as well as due to the features recited therein.

CONCLUSION

In view of the above amendments and arguments, it is believed that the above-identified application is in condition for allowance, and notice to that effect is respectfully requested. Should the Examiner have any questions, the Examiner is encouraged to contact the undersigned at (408) 975-7963.

The Commissioner is authorized to charge any fees or credit any overpayments which may be incurred in connection with this paper under 37 C.F.R. §§ 1.16 or 1.17 to Deposit Account No. 11-0600.

Respectfully submitted,

Date: May 19, 2008

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SJ01 121054 v 1